

## **REMARKS**

This paper is being submitted in response to the Office Action mailed January 30, 2006. Claims 3–15, 17, 18 and 27–34 are withdrawn from consideration. Claims 1, 2 and 16 are currently pending in this Application. With entry of this Amendment, claims 1 and 3 are amended, claims 27–34 are cancelled, and claims 35–48 are added.

Claims 1 and 3 are amended to clarification of the claimed subject matter. Support for the amendments is found throughout the specification, for example at page 7, lines 26-29; and page 15, line 26 *et seq.*

Claims 27-34 are cancelled without prejudice or disclaimer as non-elected subject matter. Applicant reserves the right to pursue this subject matter in one or more continuing applications.

Claims 35–47 are added to the elected group of claims. Support for these claims is found throughout the specification, for example at page 10, lines 25-31; and page 18, lines 6–8. Applicant respectfully requests examination of all the claims in light of the following remarks.

### **A. Restriction**

Claim 3 was withdrawn by the Office on the basis of the species election. However, claim 3 should not be withdrawn on that basis, as amendment in view of a species election is made only where no general claim is found to be allowable. Claim 3, depends from claim 1 and further directs the method of claim 1 be performed on multiple target feature locations of the array. Claim 3 is amended to clarify its relationship to claim 1. Pendency and consideration of claim 3 is respectfully requested.

Applicants do not agree with the Office's characterization of Groups I and II. The Office Action indicates --Group II is an application of the generalized claims of group I to a specific application of an array while Group I is a distinct method of obtaining a set (not necessarily an array) of images. – Page 3, ¶1. In Applicant's view, both the claims of group I and group II are directed to methods involving arrays. For example, in both claim 1 (Group I) and claim 4 (Group II), the feature and target feature location are on **an array**. In addition, both claims 1 and 4 are generally directed to a method including creating a set of images of droplets deposited at a target feature location on an array to generate an overlay composite of the target feature location. In our view, application of the general method of claim 1 encompasses the subject matter of claim 4, and respectfully request rejoinder of these groups of claims.

**B. Information Disclosure Statement**

The Office Action notes that the Information Disclosure Statement filed June 30, 2003 referenced copies of the references provided with the parent to the present application. The Examiner indicated problems with the legibility of these references. New copies of these references, where available, along with a copy of the original IDS, are provided in response to this Office Action. The Applicant respectfully requests that the Office provide a signed copy of the list of references.

**C. Interview Summary**

On April 28, 2006, a telephonic interview was conducted by Anne Murphy with Examiner Negin and his supervisor, John Brusca. Subject matter of the invention and restriction were discussed. The Examiner has indicated that he will provide a summary of the interview.

**D. Rejection under 35 U.S.C. § 103(a)**

Claims 1, 2 and 16 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Svyatsky (U.S. Patent No. 4,893,952) in view of Wang et al. (U.S. Patent No. 4,508,463). The Applicant respectfully traverses this rejection.

Independent claim 1, as amended is directed to a method to obtain a set of images of representing a target feature location following deposition of a corresponding sub-set of multiple droplets at the target feature location on a **biopolymer** array and generate an overlay composite. New claim 38 similarly includes obtaining a plurality of images represented a target feature location following deposition of droplets and generating an overlay composite from the set of images, wherein the overlay composite provides information about the target feature. Claims 2, 3, 16, 35–37 and 48 depend from claim 1. Claims 37–47 depend from claim 38.

To support a rejection under 35 U.S.C. section 103, the collective teachings of the prior art must have suggested to one of ordinary skill in the art that, at the time the invention was made, applicant's claimed invention would have been obvious. The cited references, either alone or in combination, must teach or suggest all the limitations of the claims. The Applicant submits that the Svyatsky and Wang references, either alone or when combined, do not teach or suggest all the limitations of the claims.

The Office Action notes that Svyatsky ('952) teaches the first step of the instant claim 1 by teaching multiple alphabetic/numeric characters or images, each having its own location on a workpiece. The Office Action further notes that there is no requirement in claim 1 that the multiple images representing target feature locations on an array be comprised of

biological macromolecules. The Applicant respectfully disagrees. The specification clearly defines “array” as “any one or two dimensional arrangement of addressable regions bearing a particular chemical moiety to moieties (for example, biopolymers such as polynucleotide sequences),” at page 7, ll. 26–29. The specification further defines “target” as a chemical moiety in a mobile or fluid phase (page 8, ll. 2–4). There is no indication anywhere in the specification that the term “array,” as used in claim 1, contemplates anything other than a one- or two-dimensional arrangement of chemical moieties. Certainly, the term “array,” as used in claim 1, is not equivalent to a stream of alphabetic or numeric characters, as disclosed in Svyatsky.

Furthermore, although the term “interrogation” is not specifically defined, it has an accepted meaning to those of skill in the art to which this invention belongs. Interrogation is not “simply reading or scanning the printed results,” as the Office Action suggests. Rather, interrogation involves the analysis of a quantity associated with an array feature. For example, interrogation of the array by analyzing the fluorescence intensity is described at page 7, line 26 to page 8, line 20 of the instant Application.

The Office Action concedes that Svyatsky does not teach the generation of an overlay composite, which is an element of claim 1. Furthermore, the Office Action also notes that Svyatsky does not teach overlap of the subsets, as in claim 2 of the present Application, or interrogation of an overlay of the subsets, as in claim 16 of the present Application. Instead, the Office Action relies on Wang (‘463) to provide the missing claim elements.

The Applicant respectfully disagrees. Wang discloses a method for improving the resolution of print characters generated by a high density dot matrix printer. There is no indication in Wang that the methods described could be used for an array of biopolymers, which is an element of claim 1 of the present Application. Furthermore, the “back and forth” process described in Wang is not the same as the method for generating an overlay composite in the present Application. Wang discloses forward and reverse pass printing that produces characters with overlapping dots and increased resolution. The overlay composite of the present Application, on the other hand, is generated using a processor that collects multiple images from each target feature location on the array and from a predetermined area around the target feature location and then by a logical AND operation determines the overlap of droplet deposition at each feature (page 16, ll. 1–18). Also, unlike the printing process described in Wang, the overlay composite is not generated to improve resolution, but rather to provide a representative map of the array features to a user (page 16, ll. 14–15).

Alternatively, the overlay composites can be generated as quality control measures, as described on page 16, line 19 to page 17, line 4.

In sum, Svyatsky does not disclose an element of the present invention (i.e. a method for obtaining multiple images from an array comprising biopolymers). Furthermore, because Wang also does not disclose an array containing biopolymers, and further does not disclose an overlay composite, or interrogation of an overlay composite, the references, either alone or in combination, do not teach all the claim limitations of the present invention. It would not have been obvious to a person of skill in the art to combine the dot matrix printing teachings of Svyatsky and Wang to arrive at a method for generating multiple images from an array comprising chemical or biological moieties.

#### SUMMARY

In view of the above amendments and remarks, Applicant respectfully requests a Notice of Allowance. If the Examiner believes a telephone conference would advance the prosecution of this application, the Examiner is invited to telephone the undersigned at the below-listed telephone number.

Respectfully submitted,  
MERCHANT & GOULD P.C.  
P.O. Box 2903  
Minneapolis, Minnesota 55402-0903  
(612) 332-5300

Date: May 1, 2006

/Anne M. Murphy/  
By: Anne M. Murphy  
Reg. No. 54,327